

EXPANDING BROADBAND:  
JOBS, INNOVATION, AND  
RURAL DEVELOPMENT

*Th. Jefferson*

WE HOLD THESE TRUTHS TO BE  
EVIDENT, THAT ALL MEN ARE  
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AND THE PURSUIT OF HAPP  
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VIRGINIA  
ECONOMIC  
FORECAST  
2012-2013

THE THOMAS JEFFERSON INSTITUTE FOR PUBLIC POLICY

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## Foreward

The Thomas Jefferson Institute for Public Policy is proud to present its thirteenth annual report on the economy of the United States and Virginia. It is part of the foundation's efforts to offer well-researched studies for our state leaders to assist them in better preparing for the future.

This year's annual *Virginia Economic Forecast* was again researched and written by Dr. Christine Chmura and her team at Chmura Economics & Analytics (Chmura) headquartered in Richmond. Dr. Chmura founded Chmura Economics & Analytics in 1999 after serving as Chief Economist at Crestar Bank (purchased by SunTrust) for seven years. Chmura has since grown into a leading member of its industry, specializing in quantitative research, traditional economics, workforce and economic development, and software design.

"Virginia Economic Forecast: 2012–2013" is made available to our state's elected leaders, business leaders, and the media in order to assist them in better understanding the economic reality facing our state. This year's edition, titled "Expanding Broadband: Jobs, Innovation, and Rural Development," features an analysis of the impacts of broadband expansion in the nation, particularly in Virginia and her rural areas. The economic forecast also describes the continued, but slow improvement in the economy in 2011 and expectations going forward against the backdrop of uncertainty.

Last year's *Virginia Economic Forecast* described expectations of an accelerating recovery, but growth proved to be sluggish. In 2011, real gross domestic product expanded 1.8%, more moderate than Chmura's forecast of 2.7%. Private investment performed close to expectations overall (+5.0% versus an expected +5.5%) while consumer spending was less robust than projected (+2.2% versus a forecast +2.9%). Government spending contracted as forecast in 2011, though the cutback was a more drastic 2.1% compared to the projected 0.6% decline. In Virginia, job expectations were met as employment expanded 1.5% after being forecast to grow 1.4%. Real retail sales in the state, however, were disappointing, projected to grow 4.2% but only managing a 2.0% expansion.

We once again thank the SunTrust Foundation for sponsoring this year's "Virginia Economic Forecast: 2012–2013." Nothing in this report should be construed as supporting or opposing any legislation. The opinions are those of the authors and not necessarily those of the Thomas Jefferson Institute, its Board of Directors, or SunTrust as the sponsor of this report.

Michael W. Thompson  
Chairman and President  
Thomas Jefferson Institute for Public Policy  
June 2012

### **The Nation**

- Nearly three years after the end of the most severe recession since the Great Depression, U.S. economic growth remains weak. The U.S. economy has experienced 11 consecutive quarters of growth in real gross domestic product (GDP), though growth has not exceeded 3.0% since the second quarter of 2010. While employment has expanded since October 2010 and 823,000 nonfarm payroll jobs have been added so far in 2012, job growth in April and May of 2012 was extremely weak.
- The U.S. economy is experiencing a tepid recovery because of the headwinds that remain: a labor market struggling to gain traction, the seemingly endless European sovereign debt crisis, and concern about potential government spending cuts coupled with tax increases. The recovery will likely remain somewhat weak in 2012 due to the anemic labor market and uncertainties plaguing businesses, consumers, and investors.
- Chmura Economics & Analytics (Chmura) forecasts real GDP to grow 2.3% in 2012 and 3.0% in 2013. Employment is expected to expand 1.4% in both 2012 and 2013. Consumer spending grew 2.7% in the first quarter of 2012 and is expected to grow 2.2% in 2012 and 2.3% in 2013. Residential real estate and investment in commercial structures are forecast to expand in 2012 and 2013 with continued growth expected in 2014. Despite an uptick in headline inflation in 2011, inflation remains under control and interest rates are forecast to remain very low.

### **Broadband**

- Affordable and high quality broadband internet access will help invigorate Virginia's economy and create jobs in three main ways: (1) investment in broadband infrastructure creates jobs, (2) broadband-enabled innovation expands the reach of small businesses, and (3) high speed internet access improves efficiency and expands educational opportunities. While Virginia does better than national norms on measures of availability, it scores poorly in terms of its depth, and prices vary significantly across the Commonwealth.
- Up-to-date broadband is a key driver of economic development, especially for rural areas. Government studies and surveys of businesses show that broadband access is an important component that factors into a business's decision to locate or expand its operations in an area. Moreover, broadband boosts innovation, gives small businesses access to a global market place to offer their goods and services, and enables new business models to develop.
- To maximize the benefits to all of Virginia, broadband internet access has to be affordable, widely available, and deep in terms of its functional capacity. Undoubtedly, private sector firms and entrepreneurs need to lead this initiative with the Virginia government primarily providing a level playing field so competition and innovation can flourish.

## Virginia

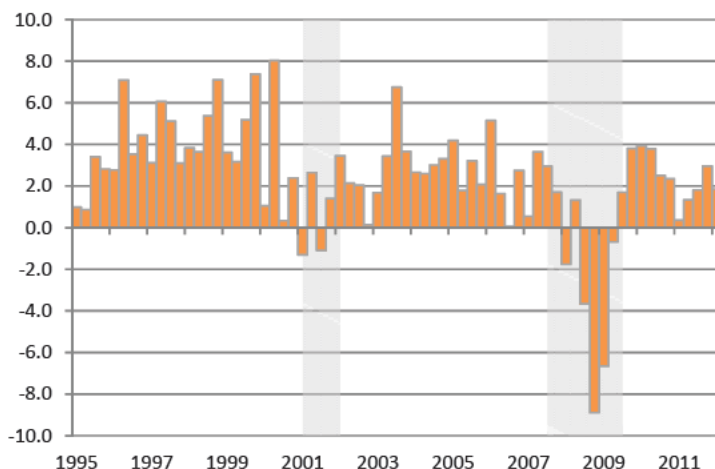
- In Virginia, employment expanded 1.3% (+47,408 jobs) over the year ending March 2012 compared to 1.5% growth in the nation. Since May 2011, the year-over-year pace of job growth in the nation has exceeded the pace in Virginia. This contrasts with the period from October 2008 through November 2009 when employment in both the state and nation were contracting, but the pace of job loss in the nation was over a percentage point faster than in Virginia.
  - Over the year ending March 2012, most of the job gains in Virginia were due to three sectors: education and health services (+16,596 jobs); leisure (+10,446); and finance, insurance, and real estate (+8,582). Construction added 834 jobs in the state over this period, equivalent to a 0.4% employment gain—potentially signaling a turnaround in this industry that posted only one month of year-over-year job growth from October 2006 to December 2011.
  - The housing market in Virginia remains weak, but is beginning to show signs of stabilization. The Virginia Association of Realtors reported that 83,748 homes were sold in the state in 2011, a 0.2% increase from 2010. The median sales price in December 2011 was \$225,000, down 3.3% from the prior year. Single-family building permits in Virginia posted a 2.5% annual average contraction in 2011 but are projected to expand 8.1% in 2012.
-

## Recovery Continues at a Modest Pace

Real gross domestic product (GDP) increased at a frustratingly slow annualized pace of 0.4%, 1.3%, and 1.8%, respectively, in the first three quarters of 2011, followed by annualized gains of 3.0% in the fourth quarter and 1.9% in the first quarter of 2012.<sup>1</sup> GDP growth, which has been positive for 11 consecutive quarters, has not exceeded 3.0% since the second quarter of 2010.

Although the economy has shown signs of improvement since the end of the third quarter of 2011, some analysts have become concerned that it may again be losing momentum. The labor market recovery remains tepid. Additionally, uncertainties over Europe and potential U.S. tax increases and reduced government spending in 2013 are likely holding back growth.

Real Gross Domestic Product  
Quarterly Annualized Percent Change



Source: Bureau of Economic Analysis

Almost three years after the end of the national recession, the U.S. economic recovery remains slow and uneven. Employment has increased for twenty consecutive months, though the pace of job recovery has been uneven. In February 2012, nonfarm payroll employment grew by 259,000, followed by smaller increases of 143,000 in March, 77,000 in April, and 69,000 in May. The Dow Jones Industrial Average has rebounded strongly since the first quarter of 2009, but investors remain cautious amid ongoing uncertainty—especially concerning Europe—and, as a result, stocks essentially moved sideways since June 2011. In positive labor market news, the four-week moving-average of initial unemployment claims, which had

been above the important 400,000 mark (the threshold under which is usually associated with steady job growth) since August 2008, has been below 400,000 since November 2011.

## Headwinds Remain

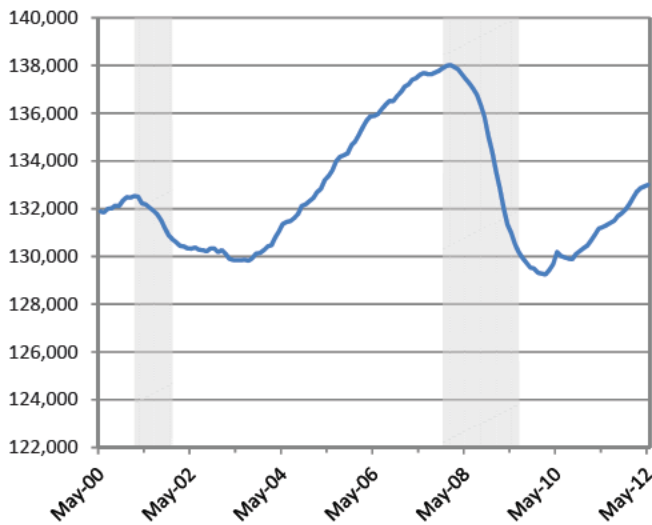
In the aftermath of the longest and deepest postwar recession, the U.S. economy continues to experience a somewhat weak and uneven recovery because of the numerous headwinds that remain. In particular, a listless labor market, the ongoing European debt crisis, and uncertainty about the possibility of simultaneous federal

<sup>1</sup> The first quarter GDP is based on the “second” estimate from the Bureau of Economic Analysis (BEA).

spending cuts and tax increases scheduled to hit at the beginning of 2013 pose downside risks for the U.S. economy. In fact, a Congressional Budget Office report concluded that the large reduction in spending and increase in taxes mandated by the Budget Control Act of 2011, which is scheduled to begin in January 2013, will likely put the nation in a recession during the first half of 2013.<sup>2</sup>

Lack of job growth has been damping overall economic growth because of the associated reduction in wages and spending. The severity of the recession that ended in June 2009, and the prospect of slow employment gains, will likely hamper growth for a few more years. From December 2007 to February 2010, 8.7 million jobs were lost in the nation. Since then, 3.8 million jobs have been added, leaving a net loss of roughly 5.0 million jobs based on nonfarm payroll employment. If employment continues to expand at a moderate 149,000 jobs per month—the average pace over the last twelve months (ending May 2012)—it will take 34 months or a little

**Employment  
Nonfarm Payroll in Thousands**



Source: Bureau of Economic Analysis

under three years to reach pre-recession employment levels.<sup>3</sup> The unemployment rate stood at an elevated 8.2% as of May 2012, down 0.8 percentage points from a year earlier. Chmura forecasts the national unemployment rate will average 8.1% in 2012, 7.4% in 2013, and 7.1% in 2014.

For comparison sake, during and immediately following the 2001 recession, the national unemployment rate never exceeded 6.5%. Following the 1990-1991 recession, the national unemployment rate peaked at 7.8% in June 1992 and was at 7.0% or above for the following twelve months. For a closer comparison to today's levels, we have to go back to 1982 when the unemployment rate peaked at 10.8%; following that peak, it took about four years before the unemployment rate dropped below 7.0% to stay. After the most recent recession, the national unemployment rate peaked at 10.0% in October 2009. If the forecasts stated above prove accurate, the unemployment rate could remain at 7.0% or above for at least five years following 2009's peak.

Headwinds from Europe are also creating uncertainty and may pull down domestic growth. The European sovereign debt crisis continues to unravel with a Greek exit from the euro zone looking more likely and worries about the health of Spanish banks plaguing global markets. Additionally, Italy and Portugal have seen borrowing costs soar as European leaders struggle to contain the debt crisis. Many fear the euro zone is headed for, if not

<sup>2</sup> Congressional Budget Office, "Economic Effects of Reducing the Fiscal Restraint That Is Scheduled to Occur in 2013," May 2012.

<sup>3</sup> Note that reaching pre-recession employment levels does not take into account growth needed in the labor market due to new job-seekers.

already in, a recession. A contraction in the euro zone economy will impact the United States as a European recession will likely depress demand for U.S. exports from our European trading partners. Furthermore, if the debt crisis were to lead to a financial market panic, confidence could plummet and credit conditions may again tighten, further dragging down U.S. economic growth. Predicting the extent of the spillover on the U.S. economy, however, is fairly complex as the debt crisis in Europe has lowered gas prices and lending costs domestically which has helped the U.S. economy.

The possibility of increased taxes in conjunction with large cuts in government spending is also creating uncertainty and dragging down domestic growth. Without intervening action, the Budget Control Act of 2011 will cut more than \$1 trillion in government spending over ten years, beginning in 2013. At the same time, the Bush-era tax cuts, the temporary reduction in payroll taxes, and extended unemployment benefits are all scheduled to expire at the end of this year. The non-partisan Congressional Budget Office warned in a report in May that absent a compromise, the U.S. economy would likely fall back into a recession in the first half of 2013. In this environment, businesses and consumers are responding with caution.

## Monetary Policy

The federal funds rate has been virtually 0% since December 2008. Moreover, as of April 2012, the Federal Open Market Committee (FOMC) press release continued to indicate an expected protraction of this rate:

*...the Committee decided today to keep the target range for the federal funds rate at 0 to 1/4 percent and currently anticipates that economic conditions--including low rates of resource utilization and a subdued outlook for inflation over the medium run--are likely to warrant exceptionally low levels for the federal funds rate at least through late 2014.*

The FOMC also noted in its April press release that it will continue its program of selling short-dated bonds to buy longer-dated bonds until the end of June to best foster maximum employment and price stability.

*The Committee also decided to continue its program to extend the average maturity of its holdings of securities as announced in September. The Committee is maintaining its existing policies of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction. The Committee will regularly review the size and composition of its securities holdings and is prepared to adjust those holdings as appropriate to promote a stronger economic recovery in a context of price stability.*

Many economists believe that the potential automatic spending cuts scheduled to begin in January 2013, coinciding with the expiration of the Bush tax cuts, the payroll tax cut, and extended unemployment insurance, may tip the U.S. economy back into a recession. Chairman Bernanke has indicated that he believes the impact of the potential spending cuts combined with the tax increases could be severe and has implored Congress to prevent this from happening. He recently said:

*And I am concerned that if all the tax increases and all the spending cuts that are associated with the current law which would take place, absent any Congressional action, that would occur on January 1st that that would be a significant risk to the recovery. So I am looking and hoping that Congress will take actions that will address both...requirements of a good fiscal policy.<sup>4</sup>*

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<sup>4</sup> Chairman Ben Bernanke, Federal Open Market Committee Press Conference, Washington, D.C., April 25, 2012. The two objectives of fiscal policy being referred to here are (1) fiscal sustainability over the longer term and (2) the short-term recovery of the economy.

## Forecast

Chmura forecasts real GDP to grow 2.3% in 2012 and 3.0% in 2013. Employment is expected to expand 1.4% in 2012 and 1.4% further in 2013.

Consumer spending, which accounts for about two-thirds of GDP, continues to contribute modestly to growth. Consumer spending rose 2.2% in 2011. Spending in the first quarter of 2012 increased at an annualized rate of 2.7% and is forecast to rise 2.2% in 2012 and 2.3% in 2013.

Residential real estate and nonresidential structures have started to show signs of improvement. Residential investment was 1.3% lower in 2011 compared with 2010, though quarter-to-quarter growth was positive for four consecutive quarters beginning with the second quarter of 2011. Investment in residential structures is forecast to expand 10.9% in 2012 and 9.4% further in 2013. Investment in commercial structures grew 4.6% in 2011 after falling 15.7% in 2010 as the contraction in employment from the recession and its slow rebound reduced the need for additional commercial real estate. In the fourth quarter of 2011, investment in commercial structures receded at a 0.9% annual pace followed by a larger 3.3% annualized contraction in the first quarter of 2012. However, investment in commercial structures is forecast to expand 3.0% in 2012 and 5.2% in 2013.

With inflation remaining under control, interest rates are forecast to remain extremely low by historical standards. The consumer price index rose 3.1% in 2011, driven mainly by higher energy prices, and is forecast to rise a modest 2.2% in 2012. The Fed is expected to hold the federal funds rate target at essentially zero through the end of 2014 due to weak economic conditions. Longer-term yields are expected to remain low with the 10-year Treasury yield averaging 2.1% in 2012 and 2.5% in 2013.

### Chmura Economic Forecast

	Actual		Forecast		
	2010	2011	2012	2013	2014
	Percent Change				
Real Gross Domestic Product	2.9	1.8	2.3	3.0	3.5
Consumption Expenditures	2.0	2.2	2.2	2.3	2.5
Gross Private Domestic Investment	17.9	5.0	8.4	8.7	10.8
Residential Investment	-4.3	-1.3	10.9	9.4	8.5
Nonresidential Investment	4.5	8.8	7.5	10.0	11.9
Producer's Durable Equipment	14.6	10.4	7.9	11.0	13.0
Structures	-15.7	4.6	3.0	5.2	7.6
Government Expenditures	0.7	-2.1	-1.9	-0.4	0.2
	Trade Deficit (Billions of 2005 Dollars)				
Net Exports, Goods & Services	-422.3	-414.4	-418.2	-403.7	-401.6
	Percent Change				
Consumer Price Index	1.6	3.1	2.2	1.7	2.2
	Yields (%)				
Federal Funds Rate	0.2	0.1	0.1	0.2	0.2
Prime Rate	3.3	3.3	3.2	3.2	3.2
10-Year Treasury	3.2	2.8	2.1	2.5	2.7
30-Year Conventional Mortgage	4.7	4.5	4.0	4.3	4.4

# Expanding Broadband: Jobs, Innovation, and Rural Development

The benefits from expanding access, bandwidth, and speeds of broadband or high speed internet<sup>5</sup> in the Commonwealth of Virginia are vast and vital, particularly for Virginia's rural areas. The need for expanding quality broadband has never been clearer. Affordable and high quality broadband internet access will help invigorate Virginia's economy and create jobs in three main ways: (1) investment in broadband infrastructure creates jobs, (2) broadband-enabled innovation expands the reach of small businesses, and (3) high speed internet access improves efficiency and expands educational opportunities.

Virginia scores better than the national average on measures of penetration, with only about one percent of Virginians remaining without access to any form of broadband. For maximum benefit, broadband access must be widely available (reaching the largest number of Virginians), deep (providing the necessary capacity and speed), and cost-competitive (low prices driven by competing providers). While Virginia does better than national norms on measures of availability, it scores poorly in terms of its depth, and prices vary significantly across the Commonwealth. For instance, 4G mobile broadband (the fastest mobile broadband service in the market) is not available to more than 30% of Virginians and is largely confined to portions of Northern Virginia, Greater Richmond, Hampton Roads, and a few other urban areas; furthermore, competition (multiple service providers) is limited in many of these areas.<sup>6</sup>

## Commonwealth of Virginia: Percentage of the Population with Access to Broadband

Access to Fixed-Line and Mobile Broadband	89.2%
Access to Fixed-Line Broadband Only	0.7%
Access to Mobile (3G and 4G) Broadband Only	8.9%
No Access to Broadband	1.1%

Source: Virginia Tech Center for Geospatial Information Technology, October 2011

**Virginia will benefit from the direct, indirect, and induced impact from broadband expansion.** Studies have shown that improving broadband access drives job creation.<sup>7</sup> These jobs are created through four means: (1) direct effects, jobs directly related to the design, manufacturing, and deployment of broadband technology and infrastructure, (2) indirect effects, jobs related to the servicing and supplying of the broadband service and technology providers, (3) induced effects, jobs that result from the spillover from money spent by workers and firms in the first two categories, and (4) network effects, jobs that result from the innovation of new goods, services, and even entire industries that arise from increased broadband services.

**Network effects of broadband are especially pronounced in rural areas.** Additional job creation from the network effects of expanded high quality broadband access<sup>8</sup> can boost employment an additional two to six percent with this impact likely higher in rural areas which typically gain disproportionately from these network effects compared to their urban peers.<sup>9</sup> These positive-outsized effects on rural areas are understandable

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<sup>5</sup> The Federal Communications Commission as of 2010 specifies "Basic Broadband" as data transmission speeds of at least 4 megabits per second downstream (from the internet to the user's computer) and 1 Megabit upstream (from the user's computer to the internet), "Sixth Broadband Deployment Report" 2010.

[http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2010/db0720/FCC-10-129A1.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2010/db0720/FCC-10-129A1.pdf)

<sup>6</sup> Analysis by Virginia Tech Center for Geospatial Information Technology of the broadband coverage map found at: <http://mapping.vita.virginia.gov/broadband/>—approximate 4G area based on speed analysis > 3 mbps.

<sup>7</sup> "Does Broadband Boost Local Economic Development?" Kelco PPIC 2010 [http://www.ppic.org/content/pubs/report/R\\_110JKR.pdf](http://www.ppic.org/content/pubs/report/R_110JKR.pdf).

<sup>8</sup> Defined as moving from no broadband providers to 1 to 3 providers.

<sup>9</sup> "The Effects of Broadband Internet Expansion on Labor Market Outcomes" Atasoy Univ. of Illinois Urbana-Champaign 2011 [https://netfiles.uiuc.edu/hatasoy2/www/HilalAtasoy/RESEARCH\\_files/Atasoy\\_Broadband.pdf](https://netfiles.uiuc.edu/hatasoy2/www/HilalAtasoy/RESEARCH_files/Atasoy_Broadband.pdf).

because broadband access links rural businesses with national and global markets in terms of customers, suppliers, and potential employees.

**Up-to-date broadband is a key driver of economic development.** Quality broadband access is increasingly critical for rural communities to remain attractive for potential business investment—and no Virginia community should find itself on the wrong side of the digital divide. Government studies and surveys of businesses show that broadband access is an important component that factors into a business’s decision to locate or expand its operations in an area.<sup>10</sup> Similarly, surveys show the general public feels that limited broadband access inhibits their ability to find work.<sup>11</sup> After all, most job searching and advertising is now either partially or completely conducted over the internet.

**Broadband enables long-tail strategies and boosts innovation.** Broadband enables new business models to develop. Previously, services and goods produced by small or home-based businesses were confined to a customer base that was geographically limited while the cost to reach a wider number of customers was prohibitive. Broadband access allows these small businesses to access a global market place to offer their goods and services. This enables “long-tail” strategies to emerge whereby a good or service valued by only a small segment of consumers can cost-effectively be marketed across the country and globe and thus secure enough demand to sustain a business.

Similarly, new services and industries can be stimulated by broadband. The rise of “onshoring”—the growing movement to retain or bring back jobs that could or have moved overseas—is directly enabled by up-to-date broadband services. The affordability of living in many of Virginia’s rural communities, coupled with an advanced broadband network, could become the basis for a competitive advantage for creating jobs in call centers, back-office processing, and information technology services in Virginia as it has in states such as Pennsylvania.<sup>12</sup>

**The health of Virginians would benefit from up-to-date broadband.** The health care sector offers a compelling context in which broadband-enabled services can reduce costs, increase the quality of services, and spur innovation. Enhanced broadband enables a suite of health information technologies that can simultaneously empower individuals, control costs, and extend the reach of Virginia’s limited pool of health care professionals. Surveys in Kentucky found that broadband internet users who took advantage of the internet to access health care information overwhelmingly reported that their enhanced access “empowered them to become healthier;” moreover, 63% of the survey respondents indicated that utilizing the internet for health care purposes saved them money.<sup>13</sup>

Enhanced broadband internet access can help senior citizens and people with disabilities live independently, improve their quality of life, and reduce the costs of care. One study estimated that the cost savings from broadband-enabled telemedicine—which can delay or avoid institutionalized living arrangements for senior citizens and individuals with disabilities—would reach over \$200 billion for the nation over the next ten years.<sup>14</sup> Expanding quality broadband services and bandwidth is critical for Virginia to capture some of these cost savings.

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<sup>10</sup> “Connecting America: The National Broadband Plan”, FCC <http://www.broadband.gov/plan>.

<sup>11</sup> “Home Broadband 2010” Pew Research Center’s Internet & American Life Project 2010 <http://pewinternet.org/~media/Files/Reports/2010/Home%20broadband%202010.pdf>.

<sup>12</sup> “Connecting Pennsylvanians: Expanded Broadband Benefits” TechQuest PA 2011.

<sup>13</sup> “The Economic Impact of Stimulating Broadband Nationally” Connected Nation 2008 [http://connectednation.org/research/economic\\_impact\\_study/](http://connectednation.org/research/economic_impact_study/)

<sup>14</sup> “Great Expectations: Potential Economic Benefits to the nation from Accelerated Broadband Deployment to Older Americans and Americans with Disabilities” Litan, New Millennium Research Council 2005 [http://www.newmillenniumresearch.org/archive/Litan\\_FINAL\\_120805.pdf](http://www.newmillenniumresearch.org/archive/Litan_FINAL_120805.pdf)

“eGovernment Solutions That Create Value” NIC eGovernment

**High-speed internet fosters transparency and efficiency in local government.** Broadband’s benefits extend to enabling greater transparency, efficiency of service, and communication between the public and local governments and public safety providers. Online e-government applications have facilitated substantial savings in Utah and West Virginia. In the Commonwealth of Virginia, the DMV’s online e-services both saved money for the DMV as well as facilitated lower fees for all Virginians.<sup>15</sup> Meanwhile, international studies have shown that e-government services improve transparency while reducing corruption and government malfeasance.<sup>16</sup> Quality broadband also promotes cost-effective civic engagement.

**Broadband can facilitate energy conservation and benefit Virginia’s environment.** Every online purchase of a product supplants a trip to a physical retail establishment, saving time and gas, reducing air pollution, and avoiding wear and tear on Virginia’s roadways. Broadband enables “smart” technologies for residential and commercial real estate to provide every Virginian real-time assessments of their energy consumption which can help them minimize their energy usage, saving them money while reducing carbon emissions for all Virginians.<sup>17</sup>

**Broadband delivers an advantage to educating Virginia’s next generation.** From preschools to universities, education is moving digital. Classrooms that lack adequate broadband connections will increasingly find themselves behind the curve as learning techniques and online learning resources advance without them. With broadband, students and teachers can expand instruction beyond the confines of the physical classroom and collaborate with educators and students throughout the world. Broadband can also provide more customized learning opportunities for students to access high-quality, low-cost, and personally relevant educational materials such as online learning websites and free instructional videos.<sup>18</sup> Access to this type of low-cost, tailored educational material is likely to disproportionately benefit students of low-income households who have less access to non-school-provided educational material.

**Broadband is a source for enhancing quality of life.** Like all infrastructure, quality broadband access enables Virginians to more effectively, quickly, and economically engage in their passions. A national study found that utilizing broadband internet can help consumers bargain hunt and leverage the power of group buying, which can result in savings of nearly \$8,000 annually for the typical American family.<sup>19</sup> High speed access to the internet saves people time in many day-to-day mundane tasks, thus allowing them more personal and family time to engage in and pursue their favorite activities for longer periods of time.

## Southside Virginia: A Case Study in the Benefits of Broadband

Many localities in rural Virginia have developed strategies to utilize broadband networks as a catalyst for their economic development. One success story of such a strategy is the Mid-Atlantic Broadband (MBC) network in the Southern Virginia tobacco region.

MBC is a non-profit organization created in 2003, whose mission is to invest in an advanced, open-access, wholesale, carrier-class telecom infrastructure that would expand broadband services in Southern Virginia. The project started with \$6.0 million in grant funding from the U.S. Department of Commerce’s Economic Development Administration (EDA) along with a matching \$6.0 million from the Virginia Tobacco Indemnification and Community Revitalization Commission (Tobacco Commission) in order to build the first 300

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<sup>15</sup> “Cost savings lure Virginia motorists to renew decals online” hamptonroad.com 2008  
<http://hamptonroads.com/2008/08/cost-savings-lure-virginia-motorists-renew-decals-online>

<sup>16</sup> “eGovernment for Transparency” Transparency International 2002  
<http://unpan1.un.org/intradoc/groups/public/documents/apcity/unpan003930.pdf>

<sup>17</sup> “Connecting America: The National Broadband Plan”, FCC <http://www.broadband.gov/plan>

<sup>18</sup> “Constructing Complexity for Differentiated Learning” Little 2009.

<sup>19</sup> “Consumers Can Save Nearly \$8,000 Annually with Broadband Internet” Press Release Internet Innovation Alliance 11-October-2011.

miles of broadband network in the region. The Tobacco Commission subsequently provided an additional \$44 million in funding that helped MBC extend the network to 24 Southern Virginia cities and counties. Today, the MBC network includes over 1,500 miles of fiber-optic network throughout Southern Virginia. MBC serves as an open-access broadband service wholesaler while private-sector telecom providers deliver the retail end-user service to residents and businesses in the region.

The broadband capacity brought to Southern Virginia by the MBC network has helped stabilize and revitalize the Southern Virginia economy, and provides its citizens with enhanced quality of life. Prior to 2003, the region was an underserved area in terms of broadband services. Since then, with the help of the MBC network, the region has attracted companies that created jobs for the residents in Southern Virginia. In addition, the network brings advanced broadband services to the region's businesses, hospitals, and school systems. According to its 2010 Annual Report, for example, MBC leveraged a \$4 million investment into a \$20 million total investment for extending fiber optic networks to all K-12 schools in Southern Virginia that did not previously have a fiber connection.

The change in Southern Virginia before and after the MBC network has been positive. In 2011, Chmura Economics & Analytics conducted an event study to compare social and economic variables before and after 2006, when the MBC network was made available to all localities. The before and after analysis suggests that the availability of the MBC network in Southern Virginia has helped foster faster growth in employment, wages, population, and income. Moreover, since the broadband network has been in place, Southern Virginia has performed comparatively better in terms of a lower unemployment rate, a more diversified regional economy, and improved educational attainment.

## It's About Policy

To maximize the benefits to all of Virginia, broadband internet access has to be affordable, widely available, and deep in terms of its functional capacity. Undoubtedly, private sector firms and entrepreneurs need to lead this initiative with the Virginia government primarily providing a level playing field so competition and innovation can flourish.

Newer technologies delivering mobile broadband (as opposed to fixed-line providers) are likely to provide the greatest potential to cost-effectively expand high-quality broadband services to rural areas. Virginia lawmakers should pursue public policies designed to foster mobile broadband competition and to ensure that smaller broadband providers are given access to adequate bandwidth to compete with larger firms. Additionally, Virginia lawmakers should lobby the federal government to unlock additional bandwidth for all broadband service providers.

## Virginia Economy

Similar to the national economy's post-recession performance, the recovery in Virginia has not been the rapid recovery typically experienced in the aftermath of a severe recession. The recovery in Virginia remains slow and uneven, consistent with the national economy's performance, as the state and the metro areas attempt to expand economic activity beyond pre-recession levels. Nevertheless, in numerous metrics the Commonwealth is performing better than the nation overall; this includes having a lower unemployment rate and recovering a larger percentage of jobs lost due to the recession.

Virginia's year-over-year employment growth rate has lagged the national year-over-year employment growth rate since May 2011. For the year ending March 2012, total employment expanded 1.3% (+47,408 jobs) in the state compared to 1.5% growth in the nation. Prior to May 2011, the year-over-year pace of job growth in Virginia exceeded the pace in the nation for 39 consecutive months—including the period from October 2008 through November 2009 when both the state and nation were shedding jobs but the pace of job loss in the

nation was more than one percentage point faster than in Virginia.

**Employment Growth  
Percent Change, Year-Over-Year**



The quicker job loss in the nation during and immediately after the recession resulted in a deeper trough than experienced in Virginia. Employment in the state peaked in January 2008 at 3,780,800 and dropped to a trough of 3,579,100 in February 2010 for a 5.3% peak-to-trough decline. This compares with a 6.4% decline in the nation. Furthermore, as of March 2012, Virginia has recovered 72% of its peak-to-trough job losses while the nation has only recovered 41% of its losses.

Among the metro areas, there is wide variation in the recovery of recession job losses. Blacksburg, Charlottesville, and Northern

Virginia lead the pack, having exceeded their pre-recession peak levels as of March 2012. Lynchburg had the most recent trough—in December 2011—but has already recaptured 30% of the jobs lost since this new employment low. Five other metros have regained less than one-half of lost jobs: Roanoke (27%), Hampton Roads (28%), Lynchburg (30%), Danville (43%), and Bristol (46%). The final metros have regained more than 50% of employment losses from the recession as of March 2012 preliminary data: Richmond (61%), Harrisonburg (62%), and Winchester (62%).

In the near term, Virginia's job growth is expected to improve, though in somewhat modest fashion. On an annual average basis, employment in the state is projected to expand 1.7% in 2012 after increasing 1.5% in 2011. Employment growth is expected to accelerate to 1.9% in 2013—based on this forecast, the state would reach its pre-recession employment level in 2013. This projected growth rate, incidentally, represents an expected return to the historical growth rate from 1992 to 2007 when Virginia averaged 1.9% annualized job growth.

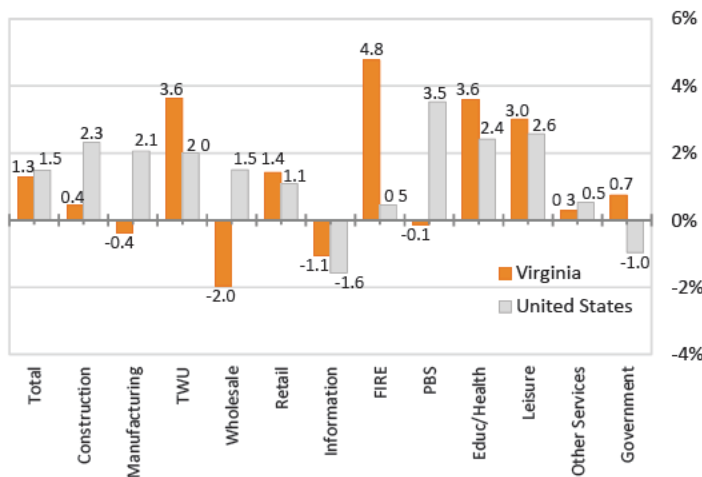
## Sector Job Growth

Over the year ending March 2012, most of the job gains in Virginia were due to three sectors: education and health services (+16,596 jobs); leisure (+10,446); and finance, insurance, and real estate (+8,582). The two former sectors are historically the second and fourth fastest growing in the state, respectively averaging 3.1% and 2.1% annualized job growth over the past twenty years, significantly faster than the 1.3% annualized growth of total employment over the same period.<sup>20</sup> Finance, insurance, and real estate employment, in contrast, has grown only slightly faster than overall employment in Virginia over the past 20 years with annualized job growth at 1.4%. Employment in the finance, insurance, and real estate sector peaked in January 2007 at 196,100 jobs in Virginia; as of March 2012, the sector was expanding jobs at a 4.8% year-over-year pace with current employment at 188,700, approximately 7,400 jobs below peak.

Construction added 834 jobs in Virginia over the year ending March 2012, equivalent to a 0.4% employment

gain. This is a marked improvement in an industry that posted only one month of year-over-year job growth from October 2006 to December 2011, coinciding with the real estate correction. Construction employment peaked in the state in March 2006 at 264,400; six years later, construction jobs numbered 192,300 in Virginia after more than one in every four construction jobs were lost.

Employment Growth by Sector  
Percent Change, Year Ending March



Three more sectors each added over 4,000 jobs over the year ending March 2012: retail (+5,682 jobs); government (+5,293); and transportation, warehousing, and utilities (+4,165). Other services (+523 jobs) also posted employment gains over this period. Of the four sectors that posted job losses over the year ending March 2012, wholesale (-2,192 jobs), manufacturing (-877), and information (-793) have yet to make

much progress in regaining jobs lost from their previous peaks. Professional and business services (-850 jobs from March 2011 to March 2012), however, had surpassed its previous peak in January 2011.

## Technology

The contraction in high-tech employment in Virginia during the recession was less severe and prolonged than in the overall economy. From the third quarter of 2008 to the first quarter of 2010, high-tech shed about 13,300 jobs in the state for a 2.2% contraction. By comparison, high-tech employment in the nation posted a 6.7% peak-to-trough contraction over the same period.

The latest data show high-tech employment expanding in Virginia. For the year ending with the third quarter of 2011, high-tech added 4,366 jobs in the state for a 0.7% expansion. Wages and salaries in high-tech industries grew even faster over this period, expanding 6.8%—slightly faster than the 6.2% expansion in wages and salaries among all industries. Seven of the eleven metro areas expanded high-tech employment over this period, though

<sup>20</sup> Note that the 1.3% growth rate over the last twenty years is much lower than the 1.9% growth rate cited earlier for the 1992-to-2007 period. This is because the latter period does not include the contraction and slow growth years of the most recent recession.

only two, Northern Virginia and Richmond, added more than 100 high-tech jobs. The Northern Virginia metro area added 2,192 jobs, accounting for more than one-half of all high-tech jobs added in the state. High-tech employment shrank in Danville, Lynchburg, Harrisonburg, and Hampton Roads over the same period. Hampton Roads shed 1,793 high-tech jobs, representing a 2.1% decline in high-tech employment in the region.

Level-one high-tech industries are those employing a higher percentage of technology-oriented occupations compared with level-two or level-three industries. Level-one industries contracted 2.4% in Virginia from peak to trough due to the recession, much less than the 7.3% contraction in the nation. Over the year ending with the third quarter of 2011, the largest job gains among level-one industries in Virginia were posted in computer systems design and related services (+6,232 jobs) and other information services (+609). Over the same period, five of the twelve level-one industry groups shed jobs in the state, led by a 1,765-job contraction in architectural, engineering, and related services.

## High-Technology Growth in Virginia

NAICS	Industry	Employment				Wages and Salaries Thousands of Dollars*			
		2010Q3	2011Q3	Change	% Change	2010Q3	2011Q3	Change	% Change
	<b>Total Employment</b>	3,541,893	3,589,995	48,102	1.4	42,862,951	45,519,542	2,656,591	6.2
	<b>Total High Technology</b>	588,927	593,293	4,366	0.7	13,529,184	14,445,967	916,783	6.8
	<b>Level 1</b>	275,839	280,113	4,274	1.5	6,519,290	6,981,083	461,793	7.1
3254	Pharmaceutical and Medicine Manufacturing	3,424	3,109	-315	-9.2	64,374	61,948	-2,426	-3.8
3341	Computer and Peripheral Equipment Manufacturing	675	713	38	5.6	11,016	11,369	353	3.2
3342	Communications Equipment Manufacturing	1,461	1,400	-61	-4.2	37,611	29,459	-8,152	-21.7
3344	Semiconductor and Other Electronic Component Manufacturing	4,103	4,381	278	6.8	66,144	74,003	7,860	11.9
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	4,677	4,236	-441	-9.4	103,843	88,805	-15,038	-14.5
3364	Aerospace Product and Parts Manufacturing	3,204	3,300	96	3.0	69,306	81,293	11,987	17.3
5112	Software Publishers	4,896	5,135	238	4.9	140,031	152,352	12,321	8.8
5182	Data Processing, Hosting, and Related Services	11,112	10,406	-706	-6.4	212,648	212,723	76	0.0
5191	Other Information Services	7,635	8,244	609	8.0	93,931	110,676	16,745	17.8
5413	Architectural, Engineering, and Related Services	66,923	65,158	-1,765	-2.6	1,388,207	1,440,298	52,091	3.8
5415	Computer Systems Design and Related Services	139,308	145,540	6,232	4.5	3,626,321	3,949,898	323,577	8.9
5417	Scientific Research and Development Services	28,420	28,491	71	0.2	705,858	768,257	62,399	8.8
	<b>Level 2</b>	176,441	177,745	1,304	0.7	4,236,463	4,543,906	307,443	7.3
	<b>Level 3</b>	136,647	135,435	-1,212	-0.9	2,773,431	2,920,978	147,547	5.3

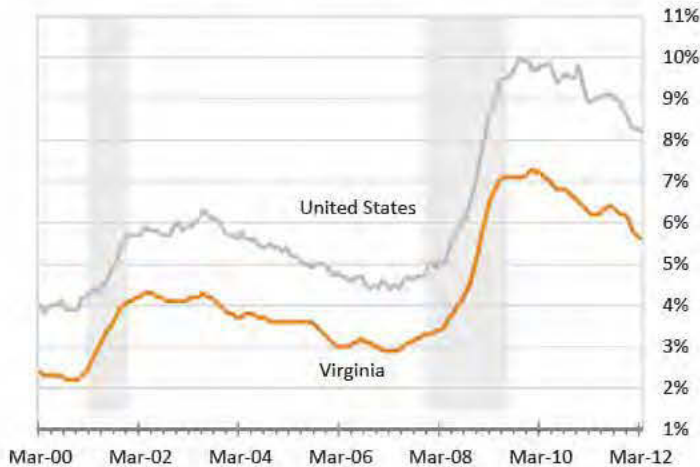
\* Includes some stock options that were exercised.

Note: Data in this table include both privately-owned and government-owned high-tech operations. Figures may not sum to totals due to rounding. Industries for which data are not disclosed are excluded from the table but not from the total high-tech figures.

## Labor Market

After peaking at 7.3% in January 2010, the unemployment rate in Virginia has steadily trended downward, reaching 5.6% as of March 2012. By comparison, the national unemployment rate peaked at 10.0% in October 2009 and has trended downward, though it still remains above 8%. Among the metro areas, the lowest March 2012 unemployment rates were recorded in Northern Virginia (4.2%) and Charlottesville (4.7%), the same metros that have had the two lowest unemployment rates in the state since December 2006. The highest metro area unemployment rates as of March 2012 were found in Danville (8.3%) and Bristol (6.7%).

## Unemployment Rate



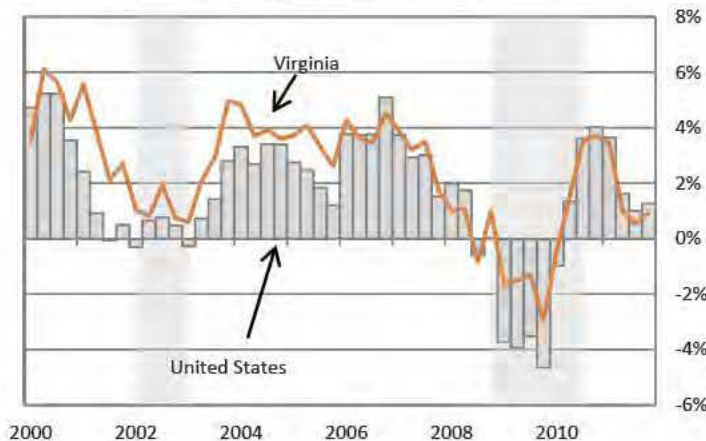
advanced 1.5% in Virginia compared to 1.9% in the nation—Virginia’s pace of growth ranking 33<sup>rd</sup> among the fifty states. Personal income is made up of (1) net earnings; (2) dividends, interest, and rent; and (3) transfer receipts. Virginia’s total income growth in 2011 trailed that of the nation due to weaker growth in net earnings—which expanded 4.4% in the state compared to 5.6% in the nation. Over the past ten years, Virginia

Initial unemployment claims data indicate improvement in the labor market, though a quick return to pre-recession levels is unlikely. The six-month moving average of initial unemployment claims in Virginia peaked in July 2009 at 46,703. Initial claims have receded sharply since, with the moving average falling 42% to 27,276 in March 2012. This level of initial claims, however, is still somewhat elevated—in the two years preceding the recession, initial claims averaged about 22,000 per month in the Commonwealth.

## Income

From 2010 to 2011, real personal income advanced 2.0% in Virginia compared to 1.4% in the nation—Virginia’s pace of growth ranking 33<sup>rd</sup> among the fifty states. Personal income is made up of (1) net earnings; (2) dividends, interest, and rent; and (3) transfer receipts. Virginia’s total income growth in 2011 trailed that of the nation due to weaker growth in net earnings—which expanded 4.4% in the state compared to 5.6% in the nation. Over the past ten years, Virginia averaged 2.0% annualized growth in real personal income, outpacing the 1.4% annualized growth in the nation.

## Real Personal Income Growth



The proportion of income supplied by net earnings fell slightly in the state while increasing in the nation in 2011. Net earnings consist of wage and salary disbursements, other labor income, and proprietor’s income. From 2010 to 2011, the proportion of income from net earnings fell 0.1 percentage point to 70.3% in Virginia while rising in the nation from 64.8% to 65.1%. The percentage of income supplied by transfer payments (social security, unemployment compensation, welfare, disability payments, etc.) decreased in both the state and the nation—consistent with a slowly

recovering economy with a modestly improved labor market. From 2010 to 2011, the proportion of income provided by transfer payments decreased from 13.5% to 13.4% in Virginia and from 18.5% to 18.0% in the nation.

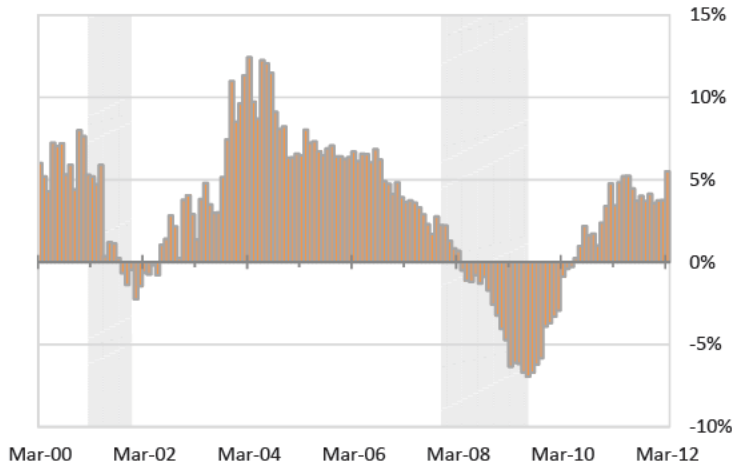
Total wages and salaries in Virginia rose 4.3% in 2011 after increasing 2.7% in 2010. With the recovery continuing at a tepid pace, wages and salaries growth is forecast to remain at 4.3% in 2012 before accelerating to 5.2% in 2013. All of the metro areas in Virginia are expected to see growth in wages and salaries in 2012; in 2013, wage and salaries growth in every state metro area is forecast to either accelerate or remain strong.

## Retail Sales

Consumer spending in Virginia continues to recover from a long and sustained drop due to the recession. Over the year ending March 2012, retail sales grew 5.5% in the state as every metro area posted an expansion. The six-month moving average of retail sales peaked in Virginia in June 2007 before plunging 8.5% to a trough in

February 2010. The moving average of retail sales reached a new high in March 2012, exceeding the pre-recession peak by 0.5%.

**Retail Sales, Percent Change  
Year-Over-Year, Six-Month Moving Average**



On an annual average basis, real retail sales<sup>21</sup> rose 2.0% in 2011 after dropping 5.4% in 2009 and contracting 0.6% in 2010. Real retail sales are expected to improve 4.1% in 2012 and to accelerate slightly to 4.2% growth in 2013. All of the state metro areas are expected to see real retail sales growth over 2012 and 2013 as sales attempt to make up ground lost during the recession.

## Housing Market

Unlike retail sales, the housing market in Virginia has not made clear strides for a rebound; it is, however, beginning to show early signs of stabilizing. The Virginia Association of

Realtors reported that 83,748 homes were sold in the state in 2011, a 0.2% increase from 2010. The median sales price in December 2011 was \$225,000, down 3.3% from a year earlier.

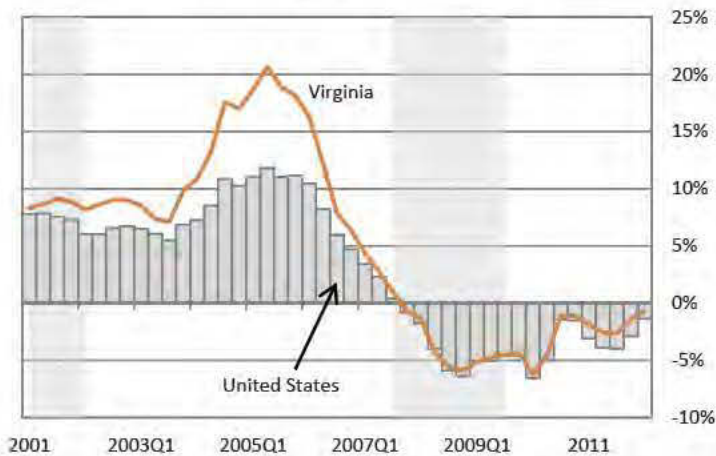
An alternative measure of home prices is the Federal Housing Finance Agency's (FHFA) House Price Index, a weighted repeat sales index that is a true measure of price appreciation as it is not affected by changes in the size or quality of homes sold. According to the FHFA index, home prices decreased 0.6% in Virginia in the first quarter of 2012 on a year-over-year basis;<sup>22</sup> this continues a string of declines begun in the fourth quarter of 2007. Home prices fell at a slightly faster 1.4% pace in the nation in the first quarter of 2011.

According to the FHFA index, Virginia home prices in the first quarter of 2012 are 14.8% below their peak that was reached in the second quarter of 2007. Among the metro areas, the largest declines in prices were recorded in Winchester (with first quarter 2012 prices 34.6% below the peak reached in the second quarter of 2006) and the Washington DC tri-state metro (with first quarter 2012 prices 22.2% below the peak attained in the last quarter of 2006).

<sup>21</sup> Real retail sales are adjusted for changes in the consumer price index.

<sup>22</sup> This is calculated using the FHFA's All-Transactions Index as opposed to their Purchase Only Index. The All Transactions Index augments purchase price valuations with appraisals from refinanced mortgages.

## Real Personal Income Growth Percent Change Year-Over-Year



The weakness in the housing market is underscored by residential building permit activity—which, instead of bounding back, has been crawling back. After double-digit percentage declines for four straight years, single-family building permits in Virginia finally posted a gain in 2010, but it was merely a 1.8% annual average expansion that was followed in 2011 with a 2.5% contraction. Single-family building permits are forecast to jump 8.1% in 2012 and 10.2% further in 2013. All of the metros in the Commonwealth with building permits data are projected to see increases in building activity in both 2012 and 2013.

## Metro Areas

Accelerated growth in employment is expected in 2012 as the labor market continues to heal; a full recovery, however, is not expected to be quick. On an annual average basis, employment in Virginia fell 3.2% in 2009 and slipped an additional 0.1% in 2010 before advancing 1.5% in 2011. Statewide employment is forecast to expand 1.7% in 2012 and 1.9% in 2013. Every metro area in the state is expected to see job growth in 2012.

Four of Virginia's metro areas are forecast to see less than a one percent gain in employment in 2012. Three of these are the metros that have been the slowest growing over the past decade, each contracting in employment from 2001 to 2011: Danville (+0.8% in 2012), Roanoke (+0.5%), and Bristol (+0.6%). The fourth metro area with modest growth expectations in 2012 is Hampton Roads, forecast to expand employment 0.8% in 2012. In March 2012, Hampton Roads posted a 0.7% year-over-year expansion in employment.

Metros with 2012 job growth expectations close to average in the Commonwealth include Lynchburg (+1.0% in 2012), Harrisonburg (+1.5%), and Richmond (+1.6%). Lynchburg hit a new trough in employment in December 2011, but has already recovered 30% of its job losses; Lynchburg also posted the third slowest employment growth among Virginia's metro areas over the year ending March 2012 at 0.5%. Harrisonburg posted the second-smallest increase (+0.2%) in year-over-year employment growth in March 2012—only Roanoke had a smaller increase at 0.1%. The unemployment rate in Harrisonburg, however, was 5.5% in March 2012, slightly below the state's 5.6% unemployment rate. Richmond has been somewhat slower than the state to recoup job losses due to the recession. As of March 2012, however, Richmond was adding jobs on a year-over-year basis at a 1.9% pace, faster than the 1.3% rate of expansion in the state. Richmond also posted a 0.8 percentage point decline in its unemployment rate over the most recent 12 months, reducing it to 6.0% as of March 2012.

Northern Virginia is expected to expand employment 2.5% in 2012 as it continues to be a main driver in the state's recovery. After employment bottomed out in the state in February 2010, about 146,000 jobs were added as of March 2012 with nearly half of that job growth occurring in Northern Virginia. In addition, as of the third quarter of 2011, Northern Virginia accounted for 57% of the state's high-tech jobs and 67% of its high-tech wages and salaries.

The remaining metro areas are forecast to record employment growth of 2.0% or better in 2012: Winchester (+2.2%), Charlottesville (+2.6%), and Blacksburg (+2.7%). Among all the state metros, Winchester posted the largest peak-to-trough employment decline (-10.5%) due to the recession. Blacksburg's decline was also fairly large (-8.0%), but the metro surpassed its pre-recession peak employment in December 2011 and employment

has continued to expand since. Charlottesville has posted the best job growth in the state over the last decade outside of Northern Virginia. From 2001 to 2011, the state managed 0.5% annualized average job growth compared with 1.2% in in Charlottesville.

**Virginia Forecast Summary: Most Likely Scenario  
Annual Average Change**

	Actual		Forecast		
	2009	2010	2011	2012	2013
<b>Blacksburg</b>					
Total Employment*	-3.6%	-1.5%	3.7%	2.7%	1.7%
Wages and Salaries**	-3.5%	-0.3%	7.0%	5.5%	4.9%
Real Retail Sales	-6.1%	-2.2%	4.6%	4.8%	3.8%
Building Permits***	NA	NA	NA	NA	NA
<b>Bristol</b>					
Total Employment*	-4.2%	-1.0%	0.8%	0.6%	1.0%
Wages and Salaries**	4.7%	-1.7%	0.5%	3.0%	3.7%
Real Retail Sales	-2.8%	-0.7%	2.7%	4.8%	5.0%
Building Permits	-25.7%	-7.6%	-5.2%	2.0%	4.4%
<b>Charlottesville</b>					
Total Employment*	-2.3%	-0.6%	1.7%	2.6%	2.5%
Wages and Salaries**	-0.4%	1.2%	5.0%	5.7%	5.7%
Real Retail Sales	-7.6%	0.8%	2.0%	3.3%	4.0%
Building Permits	-18.0%	7.6%	5.5%	3.4%	7.9%
<b>Danville</b>					
Total Employment*	-3.6%	-1.8%	2.3%	0.8%	1.3%
Wages and Salaries**	-3.3%	0.9%	2.5%	3.4%	3.5%
Real Retail Sales	-5.1%	-1.3%	2.5%	2.9%	3.1%
Building Permits	-21.1%	-4.2%	-1.7%	9.8%	10.0%
<b>Hampton Roads</b>					
Total Employment*	-3.3%	-0.8%	0.3%	0.8%	1.0%
Wages and Salaries**	-1.5%	0.6%	3.3%	3.1%	3.7%
Real Retail Sales	-5.1%	-2.0%	0.8%	2.8%	2.5%
Building Permits	-10.4%	7.3%	-6.9%	9.5%	10.4%
<b>Harrisonburg</b>					
Total Employment*	-2.6%	0.2%	2.6%	1.5%	1.8%
Wages and Salaries**	-0.9%	0.6%	4.5%	3.9%	4.4%
Real Retail Sales	-10.5%	-0.2%	2.9%	2.5%	4.3%
Building Permits	-2.2%	-11.8%	-37.6%	13.5%	15.2%
<b>Lynchburg</b>					
Total Employment*	-4.7%	-1.6%	-0.3%	1.0%	1.1%
Wages and Salaries**	-3.2%	1.1%	1.5%	3.7%	4.5%
Real Retail Sales	-9.8%	2.1%	-1.0%	2.7%	3.2%
Building Permits	-33.3%	1.0%	-34.1%	8.2%	9.9%
<b>Northern Virginia</b>					
Total Employment*	-1.7%	0.9%	2.3%	2.5%	2.9%
Wages and Salaries**	0.0%	4.2%	4.1%	5.1%	6.5%
Real Retail Sales	-3.9%	0.6%	3.0%	4.3%	5.8%
Building Permits	-1.5%	6.6%	2.2%	6.8%	9.7%
<b>Richmond</b>					
Total Employment*	-3.9%	-0.5%	1.2%	1.6%	1.8%
Wages and Salaries**	-4.8%	1.2%	4.1%	4.0%	4.7%
Real Retail Sales	-5.9%	-2.5%	2.5%	5.5%	4.7%
Building Permits	-32.0%	-4.7%	-3.1%	7.5%	9.3%
<b>Roanoke</b>					
Total Employment*	-4.1%	-0.4%	0.3%	0.5%	0.9%
Wages and Salaries**	-1.6%	-0.8%	3.5%	4.2%	4.8%
Real Retail Sales	-10.9%	-2.1%	2.5%	3.2%	3.5%
Building Permits	-44.7%	-9.8%	9.6%	2.5%	4.0%
<b>Winchester</b>					
Total Employment*	-4.7%	1.3%	2.8%	2.2%	2.2%
Wages and Salaries**	-2.6%	3.3%	4.6%	4.8%	5.3%
Real Retail Sales	-11.3%	1.8%	7.3%	4.7%	5.6%
Building Permits	-15.2%	-2.9%	-3.4%	12.6%	13.3%
<b>Non-MSAs</b>					
Total Employment*	-6.3%	-0.8%	1.9%	1.4%	0.7%
Wages and Salaries**	-1.4%	4.7%	7.7%	5.3%	5.3%
Real Retail Sales	-4.9%	-0.2%	-1.3%	3.4%	2.2%
Building Permits	-31.6%	-13.1%	9.5%	11.4%	12.7%
<b>VA-Totals</b>					
Total Employment*	-3.2%	-0.1%	1.5%	1.7%	1.9%
Wages and Salaries**	-1.3%	2.7%	4.3%	4.3%	5.2%
Real Retail Sales	-5.4%	-0.6%	2.0%	4.1%	4.2%
Building Permits	-16.8%	1.8%	-2.5%	8.1%	10.2%

\*Employment refers to nonagricultural employment.

\*\*Wages and salaries include some options that were exercised. Actual data are through the 1st quarter of 2012.

\*\*\*Since 2005, building permits data are not reported for the Blacksburg metro.

All reported series are seasonally adjusted.

*Chmura Economics & Analytics (Chmura) was founded by Christine Chmura in 1999. The firm specializes in applied economic consulting, quantitative research, and software solutions requiring the integration of advanced economic analysis.*

- **Economic Impact Studies** - Chmura analyzes the economic impact of construction projects, transportation and tourism initiatives, and the relocations of companies and industries.
- **Economic and Workforce Development** - A variety of tools and consulting services are offered for analysis of area workforce inventories, industry conditions and target markets, and occupation clusters.
- **Education Tools** - Chmura helps educators determine demand for training programs.
- **Forecasting** - Chmura builds regional, industry, and firm-specific economic models.
- **Publications** - *The Virginia Economic Trends*® is published quarterly and the weekly *Economic Update* is available online. Chmura also creates and updates customized publications.
- **Regional Economic Development** - Chmura analyzes the strengths and weaknesses of regions to find industries that best fit an area's economic development goals and to conduct target marketing.
- **Site Selection** - Chmura provides consulting services to help businesses find the ideal location.
- **Software Solutions** - Chmura produces customized and user-friendly software systems and databases. Products include **JOBSeq**®, **WIBeq**™, and **Career Concourse**™, an online job-seeker labor market exploration tool.
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**Michael Thompson**

Chairman and President: For 25 years Mr. Thompson owned his own marketing company. He has been very active in national, state and local politics as well as a number of state and community organizations, commissions, and committees.

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**Randal C. Teague**

Secretary/Treasurer/Counsel: A Partner in the law firm of Vorys, Sater Seymour and Pease, Mr. Teague is a noted international attorney.

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**John Alderson**

President of the John Alderson Insurance Agency.

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**William W. Beach**

Director of the Center for Data Analysis and John M. Olin Senior Fellow in Economics at the Heritage Foundation.

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**James W. Beamer**

Managing Dir. for Legislative Outreach at Dominion Resources Services.

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**Stephen Cannon**

Partner, Constantine Cannon, PC, former Sr. VP of Circuit City Stores.

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**Stephan Cassaday**

President, Cassaday and Company.

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**Rebecca Donatelli**

President, Campaign Solution and/Connell Donatelli.

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**James W. Dyke, Jr**

Partner, McGuireWoods and former VA Secretary of Education.

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**B. Keith Fulton**

VP for Mid-Atlantic Region, Verizon.

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**John Hager**

Former Lt. Governor of Virginia.

*Thomas Jefferson Institute for  
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**Robert L. Hartwell**

President, Hartwell Capitol Consulting.

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**Alan I. Kirshner**

Chairman and CEO of Markel Corporation.

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**Jay Poole**

Retired Vice President for Agriculture Policy and Programs, Altria Corp. Services.

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**Joseph Ragan**

Founder and President of Joe Ragan's Coffee.

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**John Rust**

Former State Delegate and Partner, Rust and Rust law firm.

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**John Ryan**

Former Senior Counsel and Director of Govt Affairs for Bristol Myers Squibb.

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**Robert W. Shinn**

President of Public Affairs, Capitol Results.

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**Todd A. Stottlemeyer**

CEO, Interactive Technology Solutions.

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**Dr. Robert F. Turner**

Law professor at the University of Virginia at Charlottesville.

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**Robert W. Woltz, Jr**

Retired President and CEO of Verizon-Virginia.



*“... a wise and frugal government, which shall restrain men from injuring one another, shall leave them otherwise free to regulate their own pursuits of industry and improvement, and shall not take from the mouth of labor the bread it has earned. This is the sum of good government, and this is necessary to close the circle of our felicities.”*

*Thomas Jefferson*

*1801*

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